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Historical Report

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MAC SUPPORT

OF

PROJECT GEMINI

1963-1966

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Directorate of Information
Headquarters MAC
April 1967

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CLASSIFICATION
DATE 31 Dec 1979
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07-1413

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MAC/MATS SUPPORT FOR PROJECT GEMINI¹

(U) Since the inception of the GEMINI program in 1963² to its conclusion with the launch and recovery of GEMINI XII in November 1966, MAC/MATS units have performed a number of varied but essential support tasks. This support was, in many instances, an added task, performed by resources programmed for basic mission operations or which could be performed as part of normal operations. However, the urgency of the national space program justified making these resources available for support of GEMINI, although it was recognized that it could result in some interference with the primary mission of the command.³ Total cost of airlift support was \$2,416,400 and of recovery support furnished by MAC was \$1,313,600.⁴

Planning

General Task Assignment

(U) The overall plan for assignment of tasks in support of GEMINI operations was developed by the Office of the Department of Defense Manager for Space Flight Support Operations.⁵ The Commander, National Range Division, Air Force Systems Command, was designated as the DOD Manager for Manned Space

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1. On 1 Jan 66, the name Military Air Transport Service (MATs) was changed to Military Airlift Command (MAC).
 2. For timetable of GEMINI launches and names of astronauts, see App. A and B.
 3. DOD, Manager for Manned Space Flight Support Operations, Overall Plan, 3rd ed., Department of Defense Support for Project GEMINI Operations, 30 Sep 65 (hereinafter cited as Overall Plan, GEMINI), p. VI-5 (ANSAC files).
 4. DOD Manager for Manned Space Flight Support Operations, Summary Report, DOD Support of Project GEMINI, Jan 1963-Nov 1966, pp. 75, 77 (MACOS files).
 5. Overall Plan, GEMINI.

Space Flight Support Operations. He provided the single point of contact to receive requirements for DOD space flight support from the Manned Space Flight Program Managers of the National Aeronautics and Space Administration (NASA) and to transmit these requirements to the DOD agencies that would perform the requested services. Coordination on requirements was provided for by the Secretary of Defense, who authorized the Military Services to assign representatives to the Office of the DOD Manager, on a full or part time basis, to insure adequate representation in programs or specific service interests.⁶ MATS' coordination was effected through:⁷

- a. The Commander, ARRS/ARS, who, when requested, provided representation on an ad hoc basis to the DOD Manned Space Flight Support Office to assist in planning optimum procedures in the employment of Air Force resources in support of GEMINI recovery operations. This included planning for the employment of specially equipped ARRS/ARS aircraft to conduct re-entry tracking and post-landing location of the spacecraft on a world-wide basis.
- b. The Military Air Transport Service Liaison Officer at the Air Force Eastern Test Range Headquarters at Patrick AFB who assisted the DOD Manager in matters concerning MATS airlift support.⁸

Transport Airlift Planning

(U) MATS did not prepare a plan for general airlift support for GEMINI operations, nor was the command assigned specific airlift tasks

6. Ibid., p. I-4.

7. Ibid., p. III-6.

8. This position for MATS was authorized by Hq MATS in Sep 65, and Major Michael M. Mitchell was assigned to it on a permanent duty basis. Telecon, Mary L. Whittington (MAFOIH) with Frances Boelter, MAXPDG, 9 Mar 67.

GEMINI COORDINATION CHANNELS
(Operational Support)
(Prior to September 1964)

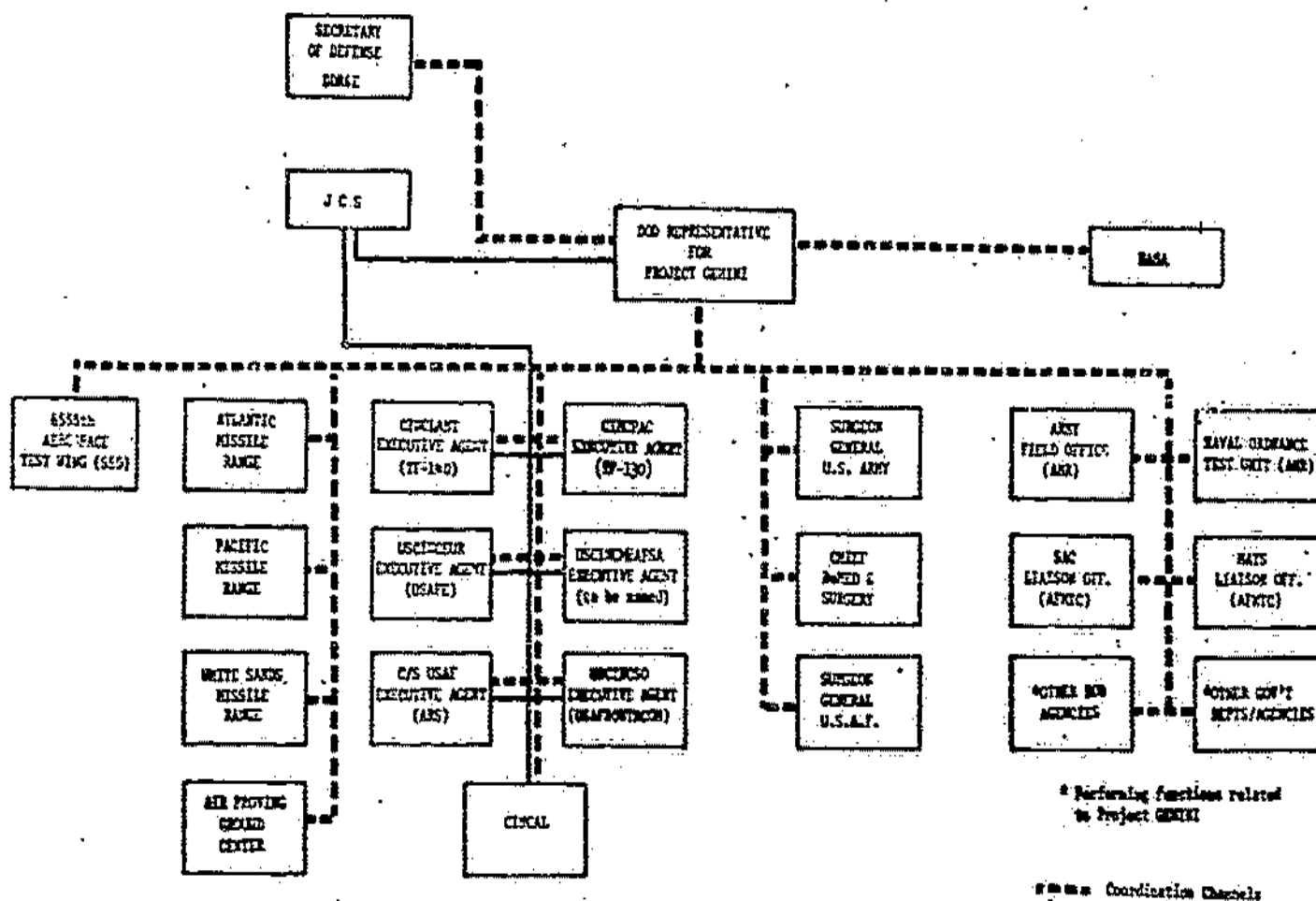


FIGURE 1

SECRETARY OF DEFENSE

JCS

DOD MANAGER FOR MANNED SPACE FLIGHT SUPPORT OPERATION DEPUTIES

NASA

NATIONAL RANGE DIVISION

WHITE SANDS MISSILE RANGE

CINCLANT EXECUTIVE AGENT (TF-140)

CINCPAC EXECUTIVE AGENT (CINCPACFLT)

SURGEON GENERAL US ARMY

MARINE CORPS

MAC

AIR FORCE WESTERN TEST RANGE

AIR PROVING GROUND CENTER

USCINCEUR EXECUTIVE AGENT (USAFE)

USCINCPACSA EXECUTIVE AGENT (AFSTRIDE)

CHIEF BUMED & SURGERY

OTHER DOD AGENCIES (1)

OTHER GOV'T DEPTS/ AGENCIES (1)

AIR FORCE EASTERN TEST RANGE

PACIFIC MISSILE RANGE

USCINCSO EXECUTIVE AGENT (USAFOUTHCOM)

COMUS EXECUTIVE AGENT (ARRS)

SURGEON GENERAL USAF

SCF (SSD)

CINCL

(1) Performing functions

(1) Performing functions related to Project GEMINI

COORDINATION CHANNELS

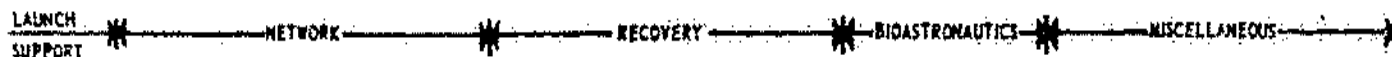


FIGURE 2

GEMINI OPERATIONAL SUPPORT FORCES

7-24 hours, well correlation of mission

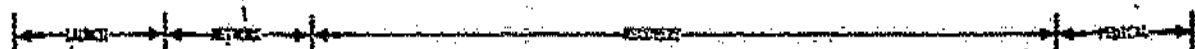
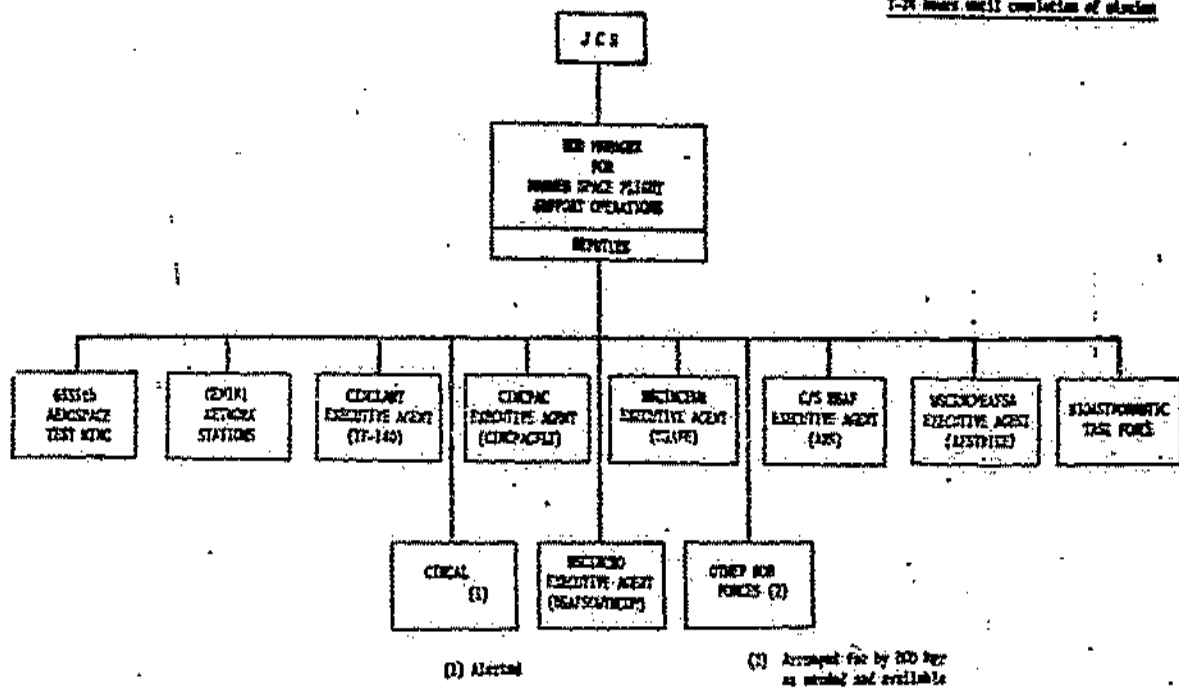


FIGURE 4

in the DOD overall plan. Airlift support operations were carried out in response to specific requirements issued by NASA. These requirements were forwarded, through channels, to Headquarters USAF (AFSTPCB) where they were placed on Special Airlift Requirements Documents (SARDs) and then transmitted to Headquarters MATS.⁹

Recovery Planning

DOD. Overall operation control of recovery forces was exercised by the DOD Manager directly or through designated operational commands, who were to conduct and/or support recovery operations, as follows:¹⁰

<u>Commander</u>	<u>Executive Agent</u>	<u>Area</u>
CINCLANT	*CTF-140	Atlantic Command
CINCPAC	CINCPACFLT	Pacific Command
CSAF	ARS	North American
USCINCEUR	USAFE/AARC	European Command
USCINCSO	USAFSO	U.S. Southern Command
CINCSTRIKE/ USCINCEAFSA	AFSTRIKE	Middle East, Africa, South Asia
CINCAL**	CINCAL	Alaskan Command

*Commander, Task Force

**CINCAL to plan, conduct, and/or support recovery operations in his area as normal SAR operations.

9. Telecon, MLW with Col. R. K. Blake, MACOFE, 8 Mar 67 (hereinafter cited as Blake 8 Mar 67 Telecon).

10. Overall Plan, GEMINI, pp. IV-5, VI-1.

(U) In the event that other contingency recovery or emergency search and rescue operations would become necessary, the JCS would direct the Unified/Specified Commands to provide additional support and non-mission forces. NASA could also request additional support in selected areas to obtain prompt response for specific purposes, such as transportation of NASA technicians, medical personnel, and debriefing teams to and from recovery areas; weather reports; photographic documentation of recovery and debriefing operations, and retrieval of space items.

European Flaming

(U) CINCPACSTRIKE, CINCPACAFB and CINCEUR were tasked separately to plan, conduct, and/or support GEMINI recovery operations in their respective areas of responsibility. CINCPACSTRIKE and USAF published USAFSTRIKE/USAF Contingency Recovery Plan, Project GEMINI, on 11 November 1964, which assigned to the 322nd Air Division, MATS, the specific task of providing airlift and support for the possible peaceful recovery of the astronauts and spacecraft.¹¹

11. Hist, 322nd Air Div, Jan-Jun 65, pp. 76-77.

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European Planning

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(U) ~~(S)~~ ⁴ Provisions for possible forceful recovery of the astronauts and spacecraft in the European/MEAFSA areas, in the event that they were forcibly detained by rebel or guerrilla groups or unfriendly tribal elements, were incorporated in CINCUSAFE/Commander Joint Task Force (COMJTF) - OPLAN 116, dated 18 February 1965, which was superseded by USAF/COMJTF OPLAN 116, dated 24 May 1965. The 322nd Air Division was again assigned a prominent role.¹²

11. Hist, 322nd Air Div, Jan-Jun 65, pp. 76-77.

12. Hist, 322nd Air Div, Jan-Jun 65, Secret Annex, p. 5.

Declassified JAW Executive
Order 11652, 31 Dec 1973.

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Planning for Other Areas. (U) Although the designated recovery area extended from 30°N to 30°S, world-wide, recovery plans were not prepared for other than the European/MEAFSA areas, which constituted the only major land mass over which the spacecraft flew in their planned orbits.¹³

¹³ Interview, MLW with Capt R. A. DiCamillo, MAXWP, 8 May 67.

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(b)(1)

13. Interview, MLW with Capt R. A. DiCamillo, MAXWP, 8 Mar 67.

(b)(1)

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(b) (1)

(U) The 1604th Air Base Group participated in recovery planning because of the possibility that the manned spacecraft might impact near Bermuda. Should this occur or appear imminent, Bermuda would be designated a Spacecraft Recovery Port. On 22 March 1965, the 1604th Air Base Group published 1604 ABG Operations Order 2-65, GEMINI Recovery in Bermuda, which was revised on 28 May 1965 as 1604 ABG OPORD 5-75.¹⁷ Tasks outlined under the OPORD included: Expeditions handling of aircraft that would transport the astronauts and spacecraft from Kindley AFB to the CONUS; provision for facilities and personnel to insure safe transfer of the spacecraft from a U.S. Navy vessel to Kindley AFB and for loading the spacecraft aboard a MATS C-130; support of NASA, medical, and other personnel; security for astronauts and spacecraft.

(U) Under USAF direction, channeled through MATS, Air Rescue Service prepared a recovery planning document, "Conceptual Global Air Recovery Plan for Projects GEMINI, MOL, and APOLLO," dated 1 June 1965.¹⁸

Operations

Airlift Support

(U) From 1963 through 1966, MAC/MATS CONUS units flew a considerable number of special assignment airlift missions to fulfill the requirements

(b) (1)

17. Hist, 1604 ABG, Jan-Jun 65, SD 2.

18. Telecon, MLW, with Major C. N. Muirhead, MAXPDF, 14 Mar 67.

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16. Telecon, MLW, with Col H. K. Blake, MACOPE, 23 Mar 67.

17. Hist, 1604 ABG, Jan-Jun 65, SD 2.

18. Telecon, MLW, with Major C. N. Muirhead, MAXPDF, 14 Mar 67.

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of the SARDe issued by USAF. Known operations were 50 plus missions, which airlifted an estimated 540 passengers and 280 tons of cargo.¹⁹

Missions were of the following types:

- a. Transport of space components and technicians from the manufacturers to Cape Kennedy.
- b. Transport of space capsules from McDonnell Aircraft Corporation at Lambert Field, St. Louis, to Cape Kennedy.
- c. Transport of technical personnel, and space tracking and communications equipment to tracking stations in the Far East and Pacific.
- d. Transport of NASA personnel, as directed.
- e. Transport of capsules, after their recovery, from Mayport NAS, Jacksonville, Florida, to Cape Kennedy, or to Lambert Field.
- f. To provide aircraft, as directed, for recovery operations in accordance with MATS OPLAN 566. These aircraft were placed on standby alert but could be used for special airlift missions to prevent their remaining idle. Generally, one C-141, or one C-135, and two C-130s were earmarked for alert.²⁰

(U) Operations began in the first half of FY 1964 with the establishment of a training program at Ellington AFB, Texas, to follow the conclusion of the MERCURY program. MATS C-130s and C-130 crews participated in the

19. Figures probably do not reflect the full extent of MAC's contribution to the GEMINI program. Many additional missions were flown, 1963-1966, in support of NASA which were not specifically identified as being in support of GEMINI. Histories, EASTAF, 1963-1966; histories, WESTAF, 1964-1965; interview, MLW with Major R. E. Meyer, MACCOS, 7 Mar 67.

20. Blake 8 Mar 67 Telecon.

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program, which was designed to provide training in the handling and loading of space capsules. A boiler plate model of a capsule was used which was transported later to Kindley AFB for the use of Air Rescue Service to train recovery personnel in attaching flotation collars to capsules.²¹

(U) While both transport air forces were requested to perform missions, EASTAF carried out the missions to an increasing extent after 1964 when WESTAF aircraft were largely committed to Southeast Asia operations. WESTAF remained responsible, however, for most of the support provided the tracking stations in the WESTAF area of responsibility, since many of these missions could be carried out with little derogation of WESTAF mission performance.

(U) All overseas MATS/MAC units were committed to the support of the GEMINI program through support of mission aircraft flying to overseas areas.

~~(S)~~ (U) The 322nd Air Division played an important role in the European/MEAFSA areas since it was assigned specific airlift and other tasks in connection with the two European/MEAFSA recovery plans referenced above. Tasks under both plans were essentially the same, with the exception of the requirement for assembly of an airlift force for transport of troops for forceful recovery. Required services included the following:²²

a. Provide airlift force and movement control force.

21. See 1604 ABG Operations on page 9.

22. Hist, 322nd Air Div, Jan-Jun 65, pp. 76-80, Secret Annex, pp. 5-7.

Declassified IAN
Executive Order 11652,
31 Dec 1973

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21. See 1604 APO Operations on page 9.

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- b. Exercise movement control of participating AFSTRIKE forces during all operations east of 10°W and all participating MATS forces.
- c. Provide and airlift rescue, transport, communications, and maintenance personnel and equipment to Recovery Control Centers.
- d. Provide route briefings and other airlift services.
- e. Obtain overflight and entry rights for forces deploying in support of the plans into foreign countries.
- f. Provide the airlift force to transport the task force to secondary staging bases in the event of an attempt at forceful recovery.

Recovery Support

(U) Kindley AFB has been an important link the world-wide NASA tracking network, supporting radar units and a small group of permanent party NASA personnel. The 1604th Air Base Group also supported an intensive spacecraft recovery training program conducted in June 1964. Personnel of the 48th, 54th, 55th, and 57th Air Rescue Squadrons participated, under the direction of a team of experts from the Landing and Recovery Division of the Flight Operations Directorate of NASA. Training took place in St. George's Harbour near Kindley AFB.²³

(U) ARRS/ARS²⁴ was heavily committed to support of the GEMINI program in the recovery phase.²⁵ The Commander served as Air Advisor to the DOD Manager for Manned Space Flight Operations and was responsible for global

- 23. MAXPA, Investigation of the Mission and Structure of Kindley AFB, Bermuda, 7 Nov 66, (MAFOIH files); Hist, 1604 ABG, Jan-Jun 64, p. 22.
- 24. The name Air Rescue Service (ARS) was changed on 8 Jan 66 to Aerospace Rescue and Recovery Service (ARRS).
- 25. ARS (Summary of Force Deployment), GT-4 (undated), (MAFOIH files); Hist, ARS, Jan-Dec 65, pp. 45-46.

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25. ARS (Summary of Force Deployment), OT-4 (undated), (MAFOIH files); Hist, ARS, Jan-Dec 65, pp. 45-46.

search and rescue and recovery of space personnel and equipment in both planned and contingency operations during the entire GEMINI series.²⁶

(U) In carrying out its responsibilities ARRS/ARS deployed aircrews, pararescuemen, and aircraft to the primary and planned recovery areas and to operating locations around the world as listed below.²⁷

<u>Location</u>	<u>Mission</u>											
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>	<u>VII</u>	<u>VIII</u>	<u>IX</u>	<u>X</u>	<u>XI</u>	<u>XII</u>
Patrick AFB	x	x	x	x	x	x	x	x	x	x	x	x
Grand Turk Is,												
Bahamas		x	x	x	x	x	x					
Piarco, Trinidad		x										
Kindley AFB, Bermuda			x	x	x	x	x	x	x	x	x	x
Recife, Brazil			x	x								
Lajes Field, Azores			x	x	x						x	x
Las Palmas, Canary Is.			x	x	x							
Kano, Nigeria			x	x								
Salisbury, Rhodesia			x									
Mauritius, Mascarene Is.			x	x	x	x	x	x	x	x	x	x
Perth, Australia				x	x	x	x	x	x	x	x	x
Kwajalein Nandi,												
Fiji Is.			x									
Hickam AFB			x	x	x	x	x	x	x	x	x	x
North Island NAS,												
San Diego			x									
Panama Canal Zone				x	x							
Lima, Peru				x	x	x	x	x	x	x	x	x
Rio de Janeiro, Braz.				x	x	x	x					
Ascension Is.				x	x	x	x	x	x	x	x	x
Wheelus Field, Libya				x	x							
Aden				x	x							
Singapore				x	x	x	x	x	x	x	x	x
Naha AB, Okinawa				x	x			x	x	x	x	x
Andersen AFB, Guam				x	x							

(cont'd)

26. Detailed information on ARRS operations is included in section on Technical Services Operations below.

27. Hist, ARS, Jan-Dec 65, pp. 48-49; DOD Manager for Manned Space Flight Spt Opns, Information Booklets, Project Gemini, for the Press, GTA-9, GTA-11, GTA-12, undated, (MAFOIH and MAFOI files).

(cont'd)

Mission

<u>Location</u>	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>	<u>VII</u>	<u>VIII</u>	<u>IX</u>	<u>X</u>	<u>XI</u>	<u>XII</u>
Pago Pago, Samoa				x	x	x	x	x	x	x	x	x
Hamilton AFB				x								
Dakar, Senegal						x	x	x	x	x	x	x
Townsville, Australia				x								
Tachikawa AB, Japan											x	x

(U) Following is a summary of ARRS deployments by mission:²⁸

<u>Mission</u>	<u>Aircraft</u>	<u>Total Personnel</u>	<u>Pararescuemen</u> ²⁹
GEMINI I	4	n/a	None
GEMINI II	15	156	32
GEMINI III	41	486	97
GEMINI IV	45	548	90
GEMINI V	42	490	73
GEMINI VI	32	430	68
GEMINI VII	30	400	54
GEMINI VIII	27	400	57
GEMINI IX	27	400	73
GEMINI X	29	400	79
GEMINI XI	22	380	65
GEMINI XII	<u>22</u>	<u>400</u>	<u>61</u>
Totals	336	4490+	649

28. Hist, ARS, Jan-Dec 65, p. 48; ARRS, Highlights for 1966.

29. Included in total personnel. Pararescuemen are specially trained in paradrop, aqua diving, and emergency medicine, and can drop into the ocean or in land areas to assist in recovering space hardware and personnel.

Technical Services Operations

Aerospace Rescue and Recovery Service³⁰

Responsibilities

(U) The responsibilities of the Aerospace Rescue and Recovery Service in the Project Gemini, as it began in 1961, included:

- a. The conduct of recovery and support operations in the North American area.
- b. The development of a global air contingency recovery plan for Gemini and other future manned space flight programs.
- c. The planning for future employment of specially equipped ARRS aircraft to conduct re-entry tracking, post landing location of the spacecraft, and recovery of flight personnel.
- d. Providing the primary means for recovery in the launch site area.

(U) There are two types of recoveries: planned and contingency. The first occurs in areas designated for flights which are aborted in the launch phase and for flights being terminated under controlled conditions at pre-selected times. A contingency recovery is one which occurs anywhere along the spacecraft ground track and outside planned landing areas.

(U) ARRS responsibility for planned recovery covered the launch site, the North American area, and Greenland. For contingency recovery ARRS deployed forces for each mission as required.

(U) In summation, the ARRS role was to locate and recover the spacecraft and occupants as quickly as possible, consistent with safe operating

 30. ARRS, Participation in Project Gemini, Mar 67.

procedures, and to return them to the location designated by the National Aeronautics and Space Administration.

Operations

(U) For Gemini 1, the unmanned orbital flight, which was launched on 8 April 1964 with no recovery planned, ARRS provided coverage for the launch site area only. Personnel were deployed with aircraft as follows:

Cape Kennedy: Two HH-43B helicopters

Patrick AFB: Two HU-16B amphibious aircraft

(U) Gemini 2 was the second unmanned flight and the first of the series for which the requirement for recovery was stated. GT-2 was launched along the Air Force Missile Test Range on 19 January 1965, after three delays due to weather including hurricanes Cleo and Dora. The space capsule which had followed a ballistic trajectory fell into the Atlantic Ocean at 16°32'N, 49°47'W, slightly over 2100 nm downrange, shortly after it was sighted at 1510Z (10:10 AM E.S.T.).

(U) For this space shot ARRS provided the following aircraft and personnel:

Aircraft

	<u>CH-3C</u>	<u>HU-16B</u>	<u>HC-54D</u>	<u>HC-97G</u>
Patrick AFB, Florida	2	2		
Grand Turk Is.,				
Bahamas		1	2	
Piarco, Trinidad			<u>5</u>	<u>3</u>
Total	2	3	7	3

Personnel. (U) One hundred fifty-six personnel, including thirty-two pararescuemen, were involved as crew members. In addition, ARRS furnished a number of controllers at Cape Kennedy.

(U) ARRS forces had deployed and returned to home bases one time because of the delay due to weather. All were deployed a second time before 19 January.

(U) Detachment 15, Eastern Aerospace Rescue and Recovery Center, which had been designated and established at Patrick AFB on 1 October 1964 to support the national space program, made a contribution to Gemini 2.

(U) ARRS had an opportunity to display its wares on Gemini 3, the first manned space flight of the Gemini project.

(U) Captain Wallace W. Lowe, 48th ARRSq, was the rescue crew commander of an HC-54D which was the first aircraft to reach the spacecraft, "Molly Brown". MSgt Ted R. Hawkins, jumpmaster, supervised the parachuting of TSgt Robert F. Johnson and A1C James E. Poole to the spacecraft where it rested on the water south of Bermuda. These two pararescuemen were attaching flotation gear to the craft when others arrived.

(U) Four hundred eighty-six personnel, including ninety-seven pararescuemen, and forty-one aircraft were deployed in support of Gemini 3 as follows:

<u>LOCATIONS</u>	<u>AIRCRAFT</u>				<u>PJ*</u>
	OH-3C	HC-54D	HC-97G	HU-16B	
Patrick AFB, Florida	4	1		2	14
Grand Turk Is., Bahamas		4			12
Kindley AFB, Bermuda			4		10
Recife, Brazil			2		6

(cont'd)

*Pararescuemen

(cont'd)

<u>LOCATIONS</u>	<u>AIRCRAFT</u>				<u>PJs</u>
	CH-3C	HC-54D	HC-97G	HU-16B	
Lajes Field, Azores		4			11
Las Palmas, Canary Islands		2			6
Kano, Nigeria			2		4
Salisbury, Rhodesia		2			4
Mauritius, Mascarene Is.			3		4
Perth, Australia			2		4
Townsville, Australia		2			4
Kwajalein Atoll, Marshall Is.		2			4
Nandi, Fiji Islands			2		4
Hickam AFB, Hawaii			2		6
North Island NAS, San Diego, Calif				2	4

(U) This was the first of the Gemini flights in which planned and contingency recoveries had to be considered, hence the distribution of ARRS aircraft and crews around the world between Latitudes 32°N and 32°S.

(U) Gemini 4 received the most ARRS support of any Gemini space flight.

(U) Five hundred forty-eight personnel, including ninety pararescuemen, were deployed around the world for the second manned Gemini space flight.

(U) Aircraft and crews were committed to those locations indicated below:

<u>LOCATIONS</u>	<u>AIRCRAFT</u>				<u>PJs</u>
	CH-3C	HC-54D	HC-97G	HU-16B	
Patrick AFB, Florida	4				6
Kindley AFB, Bermuda		1	3		11
Lajes Field, Azores		4			11
Las Palmas, Canary Islands		2			4
Kano, Nigeria		2			4
Mauritius, Mascarene Islands			2		4
Perth, Australia			2		4
Townsville, Australia		2			4

(cont'd)

(cont'd)

<u>LOCATIONS</u>	<u>AIRCRAFT</u>				<u>PJs</u>
	CH-3C	HC-54D	HC-97G	HU-16B	
Hickam AFB, Hawaii			2		4
Howard AFB, Canal Zone			2		4
Lima, Peru			2		4
Rio de Janeiro, Brazil		2			4
Ascension Island			2		4
Whealus AB, Libya			1		2
Aden, Aden Protectorate			2		4
Singapore			2		4
Naha AB, Okinawa		2		2	4
Andersen AFB, Guam		2			4
Pago Pago, Samoa Islands			2		4
Total	4	17	22	2	90

(U) Gemini 5 was launched on 21 August 1965 and recovered normally on the 29th.

(U) The 490 personnel, including 73 pararescuemen, were in place at their stations for approximately fourteen days.

(U) Locations to which crews and aircraft were committed are shown in the following table.

<u>LOCATIONS</u>	<u>AIRCRAFT</u>				<u>PJs</u>
	CH-3C	HC-54D	HC-97G	HU-16B	
Patrick AFB, Florida	4				6
Grand Turk, Bahamas					
Kindley AFB, Bermuda		1	3		8
Lajes Field, Azores		3			6
Las Palmas, Canary Islands		2			4
Mauritius, Mascarene Islands			2		4
Perth, Australia			2		4
Hickam AFB, Hawaii			2		4

(cont'd)

(cont'd) LOCATION	AIRCRAFT				PJs
	CH-3C	HC-54D	HC-97G	HU-16B	
Howard AFB, Canal Zone			2		4
Lima, Peru			2		4
Rio de Janeiro, Brazil		2			4
Ascension Island			2		4
Wheeler AB, Libya			1		2
Aden, Aden Protectorate			2		4
Singapore			2		4
Naha AB, Okinawa		2		2	4
Andersen AFB, Guam		2			4
Pago Pago, Samoa Islands			2		4
Hamilton AFB, California				2	4
Total	4	12	22	4	78

(U) Before the launch of Gemini 5 additional support was provided when a CH-3C helicopter, piloted by Captain Konrad Schlessi, carried five Radio Corporation of America communications specialists to inspect all of the surface amplification stations of the submarine cable system which connects Cape Kennedy with the down-range tracking stations of the Air Force Eastern Test Range. The trip, which normally required ten days by surface craft, was completed in two days.

(U) Gemini 6, scheduled for 25 October 1965, was cancelled when the Agena target vehicle was destroyed by a hard start of its primary propulsion system. ARRS forces which were deployed were returned to their home bases.

(U) Gemini 7, scheduled for a fourteen-day flight, was launched on 4 December. Gemini 6 was rescheduled for 12 December and was to rendezvous with 7. Gemini 6 failed to get off the launch pad after the engine ignited and immediately and automatically shut down. It was finally launched on 15 December and returned to earth next day after a rendezvous with Gemini 7.

After Gemini 7 descended on 18 December the 400 Rescue personnel, including 54 pararescuemen, returned from their locations.

(U) The aircraft and the locations to which they were assigned as shown below:

<u>LOCATIONS</u>	<u>AIRCRAFT</u>				<u>FJs</u>
	CH-3C	HC-54D	HC-97G	HC-130H	
Patrick AFB, Florida	4			3	8
Grand Turk, Bahamas					
Kindley AFB, Bermuda			4		8
Mauritius, Mascarene Islands			2		4
Perth, Australia			2		4
Hickam AFB, Hawaii			2		4
Lima, Peru			2		4
Rio de Janeiro, Brazil					
Ascension Island			2		4
Singapore			2		4
Pago Pago, Samoa Islands			2		4
Dakar, Senegal			3		6
Naha AB, Okinawa			2		4
Totals	4		23	3	54

(U) On this flight as on Gemini 5 ARRS was able to provide one of those important extras. The Coastal Sentry Quebec, a range vessel operating 250 nm southwest of Okinawa stated an urgent requirement for six Teflon ring insulators for the power amplifier section of one of its two FRW-2 low frequency command transmitters which provide telemetry, display, command, and voice capability. The rings which were delivered to the 31st Aerospace Rescue and Recovery Squadron, Clark Air Base, Philippines, where they were packaged in a waterproof container and dropped to the Coastal Sentry Queen on 9 December.

(U) After a routine deployment of ARRS forces for the 16 March 1966 launch of Gemini, those forces were electrified by the news of trouble aboard the spacecraft and the plan to terminate the space flight near the end of the sixth revolution. Gemini 8 was returned from space to the ocean surface close to the predicted point, 25°25'N, 136-00E, which is approximately 450 nm east of Okinawa and 675 from Japan.

(U) HC-54D, #72609, piloted by Captain Leslie G. Schneider, arrived at the predicted splash point in time for the crew to observe the descent and splashdown of the spacecraft. Three pararescuemen and equipment were deployed from the aircraft and the equipment, flotation collar, was attached to the spacecraft by the men. After that an MA-1 Kit, which contained two twenty-man rafts and supplies, was dropped to support the five men on the water,

(U) In addition to Captain Schneider, the crew included the following:

Copilot	1st Lt John L. Parker
Navigator	Captain David H. Schantz
Radio Operator	A1C Kenneth R. Spears
Flight Mechanic	TSgt Eugene S. Terry
Flight Mechanic	A3C Dallas H. Moore
Pararescueman	SSgt Larry D. Huyett
Pararescueman	A1C Eldridge M. Neal
Pararescueman	A2C Glenn M. Moore

(U) Gemini 8 was observed to splash down at 0323Z on 17 March. A destroyer, the USS Mason, arrived on the scene at 0600Z and took aboard the men, the spacecraft, and the R and R Section (a 300-pound package of radar equipment) at 0628, 0636, and 0656, respectively.

(U) Four other ARRS aircraft had reached the area of the splashdown.

They were:

1. HU-16B, #15292, Pilot: Captain Creighton W. Frost, arrived at 0301Z and, after evaluating the sea state, requested permission to land. Permission was denied since the decision was for the USS Mason to make the pickup.

2. HC-130H, #50969, arrived at 0450Z and remained high overhead, serving as a communications relay station.

3. HU-16B, #15295, arrived at 0450Z. Pilot: Captain David A. Sisson.

4. HC-54D, #72665, arrived at 0503Z.

(U) The 400 personnel and 27 aircraft initially deployed and the additional crews and aircraft which were launched for the recovery are indicated below.

<u>UNIT</u>	<u>LOCATION</u>	<u>AIRCRAFT</u>				<u>PJs</u>
		<u>CH-3C</u>	<u>HC-54D</u>	<u>HC-97G</u>	<u>HC-130H</u>	
Det 15,						
EAARCC	Patrick AFB, Fla.	4				8
54 ARRSQ	Kindley AFB, Bermuda			1	2	4
55 ARRSQ	Ascension Island			2		4
	Dakar, Senegal			1		2
	Lima, Peru			2		4
58 ARRSQ	Dakar, Senegal			2		4
	Mauritius, Mascarene Is.			2		4
67 ARRSQ	Kindley AFB, Bermuda				2	4
36 ARRSQ	Naha AB, Okinawa		1			1
76 ARRSQ	Hickam AFB, Hawaii			2		4
	Pago Pago, Samoa Islands			2		5
	Perth, Australia			2		5
	Singapore			2		5
79 ARRSQ	Naha AB, Okinawa		1*			3
8 Units	11 Locations	4	2	17	4	57

*3 pararescuemen parachuted from this aircraft. One was taken from other HC-54.
(cont'd)

(cont'd)

Additional forces which were launched after decision to land near Okinawa:

Naha AB, Okinawa - 3 HU-16B⁺ 2 HC-54D
 Tachikawa AB, Japan - 1 HC-130H

*One aborted after one hour.

(U) ARRS forces were deployed for Gemini 9 which was to be launched on 17 May 1966. When the Atlas booster being used to launch the Agena target vehicle, for docking exercises, aborted the flight, Gemini 9 was delayed two weeks. Rescue forces were returned to their home bases. Gemini 9A was launched, finally, on 3 June and proceeded normally through the recovery. The redeployment of ARRS crews, indicated below, was without incident.

<u>UNIT</u>	<u>DEPLOYED TO</u>	<u>AIRCRAFT</u>				<u>PJs</u>
		CH-3C	HC-54D	HC-97G	HC-130H	
Det 15, EARRC	Patrick AFB, Florida	4				8
55 ARRSQ	Kindley AFB, Bermuda		4			12
54 ARRSQ	Lima, Peru			2		6
57 ARRSQ	Orbited Position 4, and returned to Lajes Fld, Azores			1		3
	Orbited Position 5, and landed at Dakar, Senegal			1		3
67 ARRSQ	Dakar, Senegal			1		3
58 ARRSQ	Ascension Island		2			4
	Mauritius, Mascarene Islands		2			4
76 ARRSQ	Singapore		2			6
	Perth, Australia		2			6
	Pago Pago, Samoa Islands		2			6
	Hickam AFB, Hawaii		2			6
79 ARRSQ	Okinawa		2			6
8 Units	12 Locations	4	2	16	5	73

(U) Gemini 10 was a routine space shot for ARRS and, like Gemini 9A, without incident during the deployment shown below:

<u>LOCATIONS</u>	<u>AIRCRAFT</u>				<u>PJs</u>
	<u>CH-3C</u>	<u>HC-54D</u>	<u>HC-97G</u>	<u>HC-130H</u>	
Patrick AFB, Florida	4				8
Kindley AFB, Bermuda		2	2		12
Lajes Field, Azores			1		3
Dakar, Senegal			2		6
Lima, Peru			2		6
Ascension Island		2			4
Mauritius, Mascarene Islands			2		4
Perth, Australia			2		6
Singapore		2			6
Naha AB, Okinawa				2	6
Tachikawa AB, Japan			2		6
Pago Pago, Samoa Islands		2			6
Hickam AFB, Hawaii		2			6
Totals	4	10	13	2	79

(U) Gemini 11, also routine and involved 380 ARRS personnel at the following locations:

<u>UNIT</u>	<u>LOCATION</u>	<u>AIRCRAFT</u>			<u>PJs</u>
		<u>CH-3C</u>	<u>HC-97G</u>	<u>HC-130</u>	
Det 15, EARRC	Cape Kennedy, Fla.	4			12
55 ARRSQ	Kindley AFB, Bermuda		1	2	8
57 ARRSQ	Lajes Field, Azores			1	3
	Dakar, Senegal			2	6
67 ARRSQ	Mauritius, Mascarene Is.			2	6
79 ARRSQ	Perth, Australia			2	6
36 ARRSQ	Tachikawa AB, Japan			2	6
76 ARRSQ	Pago Pago, Samoa Islands		2		6
76 ARRSQ	Hickam AFB, Hawaii		2		6
54 ARRSQ	Lima, Peru			2	6
Totals		4	5	13	65

(U) Gemini 12 required nothing more than a routine deployment of 400 personnel, as indicated below.

<u>UNIT</u>	<u>LOCATION</u>	<u>AIRCRAFT</u>			<u>PJs</u>
		<u>CH-3C</u>	<u>HC-97G</u>	<u>HC-130H</u>	
Det 15, EARRC	Cape Kennedy, Florida	4			8
54 ARRSQ	Lima, Peru			2	6
55 ARRSQ	Kindley AFB, Bermuda			3	9
57 ARRSQ	Lajes Field, Azores			1	3
	Mauritius, Mascarene Is.			1	3
58 ARRSQ	Mauritius, Mascarene Is.			1	3
67 ARRSQ	Dakar, Senegal			2	5
36 ARRSQ	Tachikawa AB, Japan			2	6
	Perth, Australia			1	3
76 ARRSQ	Hickam AFB, Hawaii		2		6
	Pago Pago, Samoa Islands		2		6
79 ARRSQ	Perth, Australia			1	3
Totals		4	4	14	61

Air Weather Service³¹

Responsibilities

(U) In 1965 NASA requested assistance from the Department of Defense in gathering weather information from DOD ships and weather reconnaissance aircraft for use by the Spaceflight Meteorology Group within NASA to prepare weather forecasts for Project Gemini operations and to gather atmospheric environmental data for post flight evaluation.³²

Operations

(U) Detachment 11 at Patrick AFB, expended 85.75 manhours in providing weather support to the Gemini and the Agena launchings. The detachment made 16 card-to-card propellant monitoring forecasts which were transmitted by teletype to the Martin Company at Baltimore, Maryland,

31. AWH, Air Weather Support to Project GEMINI, 1966, in MAFOIN files.

32. See attachment #1: "Section IX - Meteorology" of the Overall Plan, DOD Support for Project Gemini Operations, 30 Sep 1965.

SECTION IX - METEOROLOGY

1. General:

The National Aeronautics and Space Administration has requested assistance from the Department of Defense in the gathering of weather information from DOD ships and weather reconnaissance aircraft for use by the Spaceflight Meteorology Group within the NASA to prepare weather forecasts for Project GEMINI operations, and to gather atmospheric environmental data for postflight evaluation. An Assistant for Meteorology has been designated by the Department of Defense Manager to assist in planning and organizing all DOD meteorological assistance as may be needed for Project GEMINI.

2. Under authority delegated by the DOD Manager, the Assistant for Meteorology is responsible for:

a. Preparation of plans for using DOD meteorological people, equipment, and other assets to meet the meteorological support requirements established by the NASA.

b. Assisting the DOD Manager in the operational control of weather reconnaissance forces and in directing these forces when world-wide meteorological situations dictate.

c. Preparation of plans for gathering meteorological forecast data to be used by the Spaceflight Meteorology Group within the NASA in preparing forecasts for Project GEMINI operations and assuring the timely receipt of these data by the Spaceflight Meteorology Group.

d. Acting as the focal point for all meteorological requirements generated by the NASA that are within the capability of DOD forces and establishing and maintaining liaison with the Spaceflight Meteorological Group within the NASA in order to identify meteorological needs and apprise the NASA of DOD capabilities.

e. Advising the DOD Manager and his staff on meteorological matters related to GEMINI support.

producer of the Titan booster. These forecasts were derived from wind, temperature and humidity observations made at launch site from ground level to approximately 150 feet. The data was recorded on punch cards and the information transmitted to Martin - Baltimore where a duplicate set of punch cards were made. In addition, four upper-air wind forecasts were sent to the Space Flight Meteorological Group via teletype, and numerous forecasts were telephoned to the project officers for both the Agena and Gemini. Completing the launch weather support was an AWS airborne weather observer flying directly over the launch area.

(U) The planned three-day flight ran into trouble during the sixth orbit which meant landing in the ocean area of Iwo Jima where weather data was normally sparse or non-existent.

(U) Fortunately, the Fuchu Weather Center (Detachment 1, 1st Weather Wing) had just gridded an ESSA-2 satellite cloud picture which included the landing area. The picture confirmed the favorable cloud-cover forecast for the area. This information was passed to the Navy via radio facsimile marking the first time, at least in the Pacific, that data received from one satellite was used to aid in the recovery of another.

(U) One of the projects of interest to AWS that was to have been performed by the Gemini astronauts involved spectrographic measurements of the oxygen absorption spectra of solar radiation reflected from cloud tops. The spectrograph was to have been hand held with observations made through one of the spacecraft windows. The viewing angle with the vertical was not to have exceeded 5 degrees with observations made seven times for ten minutes each period. Ground tracks of the spacecraft for the seven

observational periods were to have been determined and DOD reconnaissance aircraft were assigned to support observations during five of the periods.

(U) The National Range Division (NRD) STAFFMET was designated as the point of contact for scheduling the support in the west Pacific, west Atlantic, and east Atlantic. In the event that no clouds were encountered during the observing periods, additional periods were to have been scheduled. The objective of the cloud-top experiment was to establish the feasibility of determining cloud top heights from an orbiting satellite. The three DOD units scheduled to fly the support missions were the Navy Squadron VW-4, LaJes Field; the 53rd Weather Reconnaissance Squadron, Hunter AFB, Georgia, and a Navy unit in the Pacific. However, the early termination of Gemini 8 caused this experiment to be dropped.

(U) Although all the desired objectives of Gemini 9, launched on 3 June, were not achieved (the shroud on the docking vehicle failed to separate), much valuable knowledge for future missions was obtained. The weather in the west Atlantic primary recovery zone was other than ideal, or even desirable. Multiple cloud layers with lowest ceilings down to 1500 feet, scattered showers and somewhat restricted visibilities in haze caused concern. However, the recovery forces demonstrated an ability to operate in these adverse conditions. Had conditions been just a little worse, one of the other landing zones would have been chosen. The experience gained, however, gave the recovery forces confidence in operating in the future under marginal conditions when alternate landing zones would have been unavailable.

(U) All the Gemini flights were monitored by Lt. Colonel Dunn, of Operating Location 2 at Mission Control Center, Houston, Texas, where weather data from both the primary and contingency landing areas was displayed on television monitoring panels.

(U) Weather reconnaissance support was provided by the US Navy and the Air Weather Service. The Navy flew its missions in the eastern Atlantic, staging out of Lajes in the Azores and Dakar, Senegal; and in the western Pacific, staging out of Guam. The AWS weather reconnaissance aircraft operated in the western Atlantic out of Ramey AFB, Puerto Rico, and in the mid-Pacific out of Hickam AFB, Hawaii.

(U) In the Atlantic area assigned to the 53rd Weather Reconnaissance Squadron a total of eight Gemini support missions were flown in 1966 by that squadron's WC-130B aircraft requiring 68:20 flying hours. The 54th Weather Reconnaissance Squadron in the mid-Pacific area flew 16 missions involving 150:05 flying hours using its WC-130B aircraft.

Aerospace Audio-Visual Service

(U) The Department of Defense Representative for Manned Space Flight Support asked the Aerospace Audio-Visual Service (AAVS)³³ on 6 March 1964 to provide airborne photo support for the first Gemini-Titan (GT-1) launch. This support was to be similar to that given by AAVS on the last Mercury-Atlas launch. AAVS personnel would use a C-54 aircraft with motion picture cameras mounted in the cargo doorway. An M-45 tracking mount, developed by the service, would provide missile track capability.

33. At this time the Service was named the Air Photographic and Charting Service (APCS). It was redesignated on 8 Jan 1966. However, throughout this history it will be identified as AAVS.

(U) This photography was important to the program for launch coverage should the launch site be obscured by clouds. The aircraft would orbit three miles from the launch site at an altitude of up to 10,000 feet. The cameras would pick-up and begin filming the booster as soon after lift-off as possible, tracking it to 40,000 feet.³⁴

(U) The coverage of the Mercury launches had not been highly successful, but AAVS had been the first to achieve any results from an airborne platform.³⁵

(U) It was obvious that should a launch have to proceed for any reason, when there was heavy cloud cover, any coverage would be better than no coverage at all.

(U) NASA also wanted as much aerial photographic coverage as possible of the GT-1 launch. The space agency had two reasons. The GT-1 flight was for purposes of structural evaluation of the booster and capsule. Second, NASA wanted to determine who could provide the best aerial photographic capability and determine if the results were worth the effort. In addition, AAVS cameramen and photographers were given documentation assignments with the Air Rescue Service units pre-positioned around the world for recovery operations.³⁶

(U) The aerial coverage on the GT-1 launch was a failure. The aircraft power supply was not adequate to operate the cameras at normal speed. As a result the film was over-exposed.³⁷

34. Mag, IDRO 3-6-5, DOD Rep to AFCS, 6 Mar 64; History AFCS, 1963, pp. 102-103.

35. Memo for Record, telecon, Capt. H. R. Price, AAVS, with Mr. R. Murphy, NASA, 21 May 63, Mr. Murphy stated that the track on the MA-0 looked good. NASA management was happy with the results and similar support would probably be asked for Gemini.

36. Memo for Record, H.W. May, DOD Mgr for Manned Space Flight Support Office, "Photographic Coverage of GT-1", 30 Mar 64; Ltr, Harold Albert, Asst DCS, Photo, AFCS to 1365th Photo Sq, "Documentary Assignment, GT-1," 27 Mar 64.

37. Based on personal viewing of motion picture footage by AFCS Historian.

(U) To enhance the quality of photography on this project, the 1365th Photo Squadron installed a sequential timing capability. The system converted a 100-pulse per second tone burst from a ground transmitter into electrical energy. This in turn fired the Mitchell timing blocks which then exposed the timing signal on the perforated edge of the film. 1365th and 1370th Photo Mapping Wing maintenance personnel also modified the M-45 to eliminate vibration and increase turn and tilt rates. The squadron also worked out procedures to decrease the extreme power drain on the aircraft.³⁸

(U) Although these changes were not complete by 28 May, an AAVS aerial camera crew successfully filmed the launch of the Apollo Moon Vehicle Mockup on that date.³⁹

Airborne Pod Cameras

(U) Meanwhile, the DOD Representative on the project was considering the use of the AAVS-developed airborne pod cameras on future Gemini launches. On the Mercury launches and the first Gemini shot, the Navy's VAP-62 had provided the structural surveillance photography for the portion of the flight through the maximum dynamic pressure (Max Q) region between 40,000 and 50,000 feet. But, as early as 24 June 1964, there was discussion of AAVS's capability to provide this support.⁴⁰ On 31 August, the DOD Manager for Manned Space Flight

38. Hist, 1365 Photo Sq, Jan-Jun 64, p. 38; TWX, DDRG, 11-5-16, DOD Rep for Proj Gemini to AFCS, 11 May 64; TWX, FMOCE 18-E-53, 1370 FMW to AFCS, 19 May 64; Msg, AFEDD 22-E-01, AFCS to DOD Rep for Proj Gemini; 21 May 64.

39. Based on personal viewing of motion picture footage by AAVS Historian.

40. Msg, DDRG 3-6-5, DOD Manned Space Flight Support Office to CINCLANFLT, AFCS, AFMTC and NASA NSC, 6 Mar 64; Mr. Telecon, Capt Howard Price, AAVS, with Capt Kidder, DDRG, 24 Jun 64.

Support asked USAF to provide this coverage using Tactical Air Command aircraft and the AAVS Type IV pods.⁴¹

(U) These pods had grown out of early efforts to provide air-to-air photography for AAVS motion picture productions. Further development had come during the Cuban Crisis in 1962 when the need for over-the-target documentation was spotlighted. AAVS development work had led to the manufacture of an aerodynamically clean enclosure for motion picture cameras.

(U) During tests in 1964, AAVS tried out a closed-circuit television system. AAVS had designed this system for installation in the pod when production footage, requiring accurately framed film was exposed.

(U) This system used two pods. One pod housed the prime motion picture camera, an 80-frame per second Pulsemaster RZ35 35mm equipped with a 32-inch Ormilar lens. The second pod housed a 200-frame per second Monitor 600 16mm camera. In the same pod was a Kintel 2000 television camera which shared a single 24-inch Ormilar lens with the motion picture camera. A co-axial cable led from the TV camera to a cockpit monitor. All focussing, exposures and other adjustments were made before flight. The TV viewfinder allowed the pilot, or backseat photographer, as the case might be, to see exactly what the camera saw and thus fly the aircraft to get the best possible picture.⁴²

(U) When NASA launched the Mariner III Interplanetary probe on 5 November 1964, AAVS and TAC used the opportunity to practice high-altitude photographic support with the pod using the closed-circuit TV system. Despite cloud cover,

41. Msg, DERO 1-9-1, DOD Mgr for Manned Space Flt to CSAF, 1 Sep 64; Msg, AFFDD 31-H-16, AFCS to MATS, 31 Aug 64.

42. Rpt, TAC, "Second Report", TAC Test 62-77, 15 Oct 64, pp. 3-4-5.

failure of the vidicon, and the inability to use radar for positioning, the TAC aircraft acquired photography of the ICBM launch from 25,000 through 68,000 feet.⁴³

(U) This was the first time this had ever been done. Col. J.E. Warren, Chief of the DOD Manned Space Flight Support Office, stated:

"On 5 Nov 64 with the launch of the Mariner interplanetary probe, members of your organizations teamed up to perform a function previously attempted but never before accomplished, this function being to provide airborne documentary photo coverage on an ICBM-type missile in flight through altitudes of up to 68,000 feet. In spite of the inability of radar to assist in positioning and vectoring, a cloud cover which obscured their view of the launch, and their inexperience in this field of operations, the flight crews, supported by excellent air refueling support and ground maintenance, were able to achieve excellent photographic results when the odds were overwhelmingly against them. This is a first in the history of the Air Force Eastern Test Range, and a major milestone in our ability to gather usable information for future space programs. . . It has been a professional and commendable team effort for all. Although the job of photographing the Gemini/Titan II launch has not been completed, I feel confident that the results of their work will be equally as gratifying as on the Mariner launch."⁴⁴

(U) AAVS pods were used again for the Mariner IV launch on 28 November and the Centaur-4 launch on 11 December. Coverage was excellent and in great demand as a result of the booster malfunction during launch. When NASA's Director of Test Support requested coverage of the Centaur launch, he praised the photography on the Mariner launch:

"The scheduling of this support by your office for our launch attempts during the first week in December is appreciated. The availability of this high-altitude photography support, especially the presence of one F-4C aircraft on station during our hold for

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43. Rpt, DCS/Photo, AFCS "Act Rpt," p. 16; TWX, DMS 10-11-9, DOD Mgr for Manned Space Flt to MATS, SAC, and AFCS, 10 Nov 64; Rpt, "Progress Report Summary, GT-2 High Altitude Photo Coverage Test," 8 Dec 64.
44. TWX, DMS 10-11-9, DOD Mgr for Manned Space Flt Sypt to TAC, MATS, SAC, and AFCS, 10 Nov 64.

weather at T-5 on 5 December 1964, greatly influenced the launch directors decision to waive optics requirements placed on ETR for the launch. The quality of the coverage obtained on recent Mariner launch was excellent. In our opinion, the value of the film for engineering analysis purposes, considering vehicle altitudes during coverage, exceeded that of any other film obtained (ground based or aerial).⁴⁵

(U) The destruction of the Centaur-4 led to establishing procedures for film-handling if a Gemini should be lost. The pod-carrying aircraft were to land at Patrick AFB where the film would be down-loaded. RCA, which had the photo mission at the Cape, would process the 16mm film for "quick look" use by NASA. The 35mm would be taken by car to the AAVS (1365th Photo Sq) laboratory at Orlando, about 50 miles west. The 1365 lab would give it priority processing and return it to the Cape.⁴⁶

(U) The horizontal view of the vehicle acquired by the chase-plane cameras was far superior to the "up-the-tail" view provided by ground-based cameras. In addition, the filming was done while the booster was 25,000 to 90,000 feet above the earth. This eliminated a good part of the distortion created by the thick atmosphere at the earth's surface.

(U) Through this series of launches, TAC had used both the F4C and F-104 as carriers. As early as October, however, the TAC test wing at Nellis AFB suggested the F4C be the primary aircraft for carrying the pods, since the inboard wing station of that aircraft was much more stable than the same station of the F-104. AAVS agreed.⁴⁷

45. TWX, DMS 9-12-18, DOD Mgr for Mand Sp Flt Sypt to CSAF, APCB, 4520 FIS, TAC, and others, 9 Dec 64.

46. TWX, DMS 62506, DOD Mgr to APCB, 7 Jan 65.

47. TWX, DOOP-RD 10010, 4520 CCRINGWF to TAC, 8 Oct 64; Msg, AFFDD 00661, APCB to TAC, 16 Nov 64.

(U) By 15 December, the DOD Manager for Manned Space Flight Support had reached the same conclusion. In answer to a query from the USAF Chief of Staff, he replied that "Evaluation of film shot to date and economic use of both resources and finances has dictated that future high-altitude photo aircraft will be the F4C."⁴⁸

(U) A problem was discovered on the pods, however, which almost blocked their usefulness for the Gemini program. At the high altitudes to which they were flown, the nose-cone window fogged over. A number of fixes were attempted but none proved satisfactory. Then someone thought of a hand-held hair-dryer. This was tried and it worked. AAVS bought four -- one for each pod.⁴⁹

(U) There was some hesitancy on the part of NASA to support the high altitude pod-mounted cameras which AAVS was using. Despite direction by MATS in September 1964, AAVS found, after committing funds necessary to obtain the equipment needed to outfit a third TAC aircraft, that DOD and NASA were either "unwilling or unable" to pay for this equipment.⁵⁰ AAVS had bought the equipment only after TAC had agreed that the only way to insure coverage was to have a third F4C on airborne alert, ready to take over immediately should one of the primary aircraft have trouble.⁵¹ AAVS told MATS and DOD that if it were not reimbursed, it would send the pod and photo equipment to Vietnam where it was needed. However, AAVS still felt the airborne spare was necessary at Cape Kennedy.⁵²

48. TTX, IDMS 15-12-32, DOD Mgr for Manned Space Flight Supp to SAC, TAC, and AFCS, 15 Dec 64.

49. IOM, Mr. H.R. Albert, Asst DCS/Photo, AFCS, to DCS/Material, "Emergency Procurement for Gemini GT-2," 2 Dec 64.

50. Msg, AFDD 00056, AFCS to MATS, 7 Jan 65.

51. Ibid.

52. Ibid.

(U) The pods mounted on the F4C's provided photography "of excellent quality" on the GT-2 launch. NASA was especially happy with the results and other programs, such as Titan III, Apollo and Saturn had made inquiries about the service. As a result, the DOD Manager for Manned Space Flight Support asked that the support be continued through the remainder of the Gemini program. TAC did not want to continue the program, so the Air Force Audio-Visual Task Group asked Air Force Systems Command to provide the aircraft for launches beginning with GT-5. The DOD manager also acknowledged the need for additional funding for training flights but ignored the question of equipment funds.⁵³

(U) AAVS recommended three aircraft be used and asked for "necessary dollar support." But no reply was forthcoming and a month later, on 4 March, AAVS repeated its request. At the same time it stated it was deploying only two systems for the GT-3 launch.⁵⁴

(U) The next day the DOD manned space flight manager replied that "in order to assure that two AAVS equipped TAC F4C aircraft are on station during the Gemini launches it appears desirable to have another fully equipped aircraft having. . . spare photographic equipment installed on a strip alert basis at the staging base."⁵⁵ AAVS, on the basis of this statement proceeded with arrangements to provide the coverage.⁵⁶

53. TWX, AFKOFB 82024, CSAF to MATS, AFSC, AAVS, etc, 1 Feb 65; TWX, AFCAV 90365, CSAF to TAC, 6 Feb 65; TWX, DIMS 62573, DOD Mgr for Manned Sp Flt to AFCS and AFSC, 5 Feb 65.

54. Msg, AFDD 00408, AFCS to DOD Mgr for Manned Sp Flt, 8 Feb 65; Msg, AFDD 00719, AFCS to DOD Mgr, 4 Mar 65.

55. TWX, DIMS 62690, DOD Mgr for Manned Sp Flt to AFCS, 5 Mar 65.

56. Msg, AFDD 00760, AFCS to 1352d Photo Gp, 8 Mar 65.

(U) TAC pilots flew a practice mission on the Ranger launch in early March with good results,⁵⁷ but because of late assignment, missed a chance to practice on two other launches.⁵⁸

(U) All cameras assigned to GT-3 functioned properly and the product was in sharp focus and properly exposed. Lt. General Leighton I. Davis, DOD Manager for Manned Space Flight Support Operations, reported to the Secretary of Defense, "Photographic results from all three aircraft were good through the area of primary interest."⁵⁹

(U) Actually, however, the photography brought back was of marginal quality in tracking. AAVS attributed this to the late assignment of the mission, a lack of full-time assigned aircrews, and accomplishment of only one practice profile for radar positioning.⁶⁰

(U) To improve the tracking capability, AFETR let a contract to Nortronics on 30 April to purchase two tracking error detection systems (A-TEDS) for use with the AAVS pod system. It asked AAVS to cooperate by loaning the company some of its pod equipment.⁶¹

(U) The GT-4 shot had brought both good photography and good tracking. This launch concluded TAC support to the Gemini program. Henceforth, at USAF direction, AFSC would provide the chase aircraft. AFSC immediately

57. Based on AAVS Historian's viewing results of film.

58. Ltr, H.R. Albert, Asst DCS/Photo, PACS, to DOD Mgr for Manned Space Flt, "Report on DOD Support to Project Gemini," 30 Mar 65.

59. Report, Gen. Davis to Secretary of Defense Staff, Report of DOD Support for the Month of March 1965, " 8 Apr 65.

60. Ltr, H.R. Albert, Asst DCS/Photo, AFCS, to DOD Mgr for Manned Space Flt, "Report on DOD Support to Project Gemini," 30 Mar 65.

61. TWX, DMS 62888, DOD Mgr for Manned Sp Flt to AFCS, 6 May 65; Msg, AFMSS 01452, AFCS to 1352d Photo Gp, 7 May 65. Docu. Nr. 94.

designated three aircraft for the project and directed them to Eglin AFB by 1 July for equipment installation.⁶² The aircraft, redesignated as CHASE I, III and III for GT-5, would stage from MacDill AFB for GT-5, as had the TAC aircraft. Beginning with GT-6, the systems command aircraft would stage from Eglin.⁶³

(U) All the cameras functioned properly with the exception of a shutter failure on one of the Northridge 35mm cameras. The shutter failed during the aircraft pull-up on the missile. The remaining footage was of marginal quality. Once again, lack of practice in radar positioning was a cause, as was the lack of aircrew continuity in practice. The third cause, however, was traceable to the radar controller, who lost the second aircraft for 15 seconds just prior to the launch and directed the aircraft to roll out unless the pilot had visual contact with the missile. The pilot under-shot his target as a result and had to make drastic corrections to begin his pull-up. This led to poor track.

(U) In addition to recommendations for aircrew integrity and additional radar positioning training, the idea was broached of using the new nose blister being designed for F-4C combat documentation.⁶⁴

(U) On 2 September, personnel from Air Proving Grounds Command, Nortronics Division of Northrup, and AAVS met to plan the installation of the new optical

62. J.E.'s Notes, APCS Staff Meeting, 8 Jun 65; Mag, APTDD 01768, APCSto AFSC, 4 Jun 65; TWX, SCSSST 25303, AFSC to APCS, 14 Jun 65; Rpt, DCS/Photo, p. 4.

63. APCG Ops Dir 9167Z, "Gemini/F-4C Photochase Support," 17 Aug 65, p. 10.

64. IOM, Maj. H. G. Givens, Ch, Camera Division, 1365 Photo Sq, to Operations Division, 1365th, "Report on GT-5," 31 Aug 65 (submitted to DOD Mgr as AAVS Report).

trackers for the pod cameras. The new ATED system arrived at Eglin in September and was installed by 8 October.⁶⁵

(U) Maj. Gen. V.O. Huston, Deputy Director for DOD Manned Space Flight Support, reported to the Secretary of Defense, that "It is expected that tracking and photographic results in the maximum aerodynamic pressure region of missile flight will be greatly improved."⁶⁶ A month later, however, he reported that technical difficulties prevented use of the ATED. The DOD office at the Cape expected the problem to be solved before the GT-7/6 launch.⁶⁷

(U) It was not. On 12 November, AAVS told its subordinate units that tests of the ATED had been postponed indefinitely. Seven flight sorties showed the system performed satisfactorily in the pitch mode for straight and level flight, but created divergent oscillations in yaw. While the Nortronics engineers felt it could be corrected, the company refused to provide further support on the original contract, since they had already absorbed expenses equal to the original dollar value of the contract. There was no funds available for AAVS to pay for the necessary changes.⁶⁸

(U) Consequently, the Systems Command aircraft documented the GT-7/6 launch without the optical tracking system. The DOD Manager admitted that

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- 65. Rpt, APGC, Project 9167Z, Gemini/F-4C Photochase Support, "Planning Meeting for Installation of Nortronic's Optical Tracker," 2 Sep 65;
Rpt, Walter Gilmore, 1365th Photo Sq., "Gemini Photo Support," 8 Oct 65.
 - 66. Rpt, M/Gen Huston to Sec of Def, "Report for Month of September 1965," 15 Oct 65, p. 4.
 - 67. Rpt, Gen Huston to Sec of Def, "Report for the Month of October," 19 Nov 65.
 - 68. Msg, APFDD 03203, APCB to 1352 Photo Gp and 1365th Photo Sq, 12 Nov 65;
IOM, Sqdn Ldr J. Jepson, Chief, Probes & Gemini Support Division, APGC, to PGLFR, APGC, "Project 9167Z, Gemini/F-4C Photochase Support," 24 Nov 65;
MR., SMSgt M.M. Barnack, Dep Dir, Docu Div, DCS/Photo, APCB, to Mr. H.R. Albert. Asst DCS/Photo. APCB. C.. 30 Nov 65.

the F-4C photography was "excellent" the "best to date." However, it was not as smooth as the photography acquired by the new Airborne Lightweight Optical Tracking System (ALOTS) installed in an NKC-135. This system was used for the first time on the GT-7 shot with excellent results. It was also scheduled for GT-6 but was cancelled because of aircraft engine trouble.⁶⁹ For GTA-6, NASA redesignated the photo mission from "high altitude photography" to "engineering sequential photography."⁷⁰

(U) On 15 December, Lt. General Davis told AFGC that he anticipated no further requirement for F-4C photo chase support on the Gemini Program. This decision had resulted from a short discussion between him and the Gemini mission director during the GT-7/6 mission. At that time an agreement was reached to abandon the F-4C photo chase aircraft in favor of the ALOTS aircraft. Eight days later, AFSC told AFGC that unless new directions were received by 10 January, AFGC was to remove the pod wiring from the F-4's.⁷¹

(U) AAVS did not hear about this until early January and then got the information only indirectly. On 13 January, it asked the DOD Manager for guidance. On 20 January, AAVS again queried the DOD Manager. On 22 January, the DOD Manned Space Flight Manager told AAVS that it would issue instructions as soon as a decision was made.⁷²

69. Rpt, Maj. Gen. Vincent G. Huston, Dep DOD Mgr for Manned Space Flt Support Ops to Sec of Def "Report of DOD Support of Manned Space Flight for the Month of December 1965," 10 Jan 66.

70. Rpt, DOD Manned Space Flight Support Office, "Aircraft Support Summary for Project Gemini Mission GTA-6.

71. TWX, SCSST 44425, AFSC to AFGC and AFSCW, 23 Dec 65; Memo, DIMS to Director, Mission Operations, NASA, "Hi-Altitude Photographic Support for Gemini Launches," 11 Feb 66.

72. Msg, AVFDD 00089, AAVS to DOD Mgr for Manned Space Flt., 13 Jan 65.
Msg, AVFDD 00135, AAVS to DOD Mgr for Manned Space Flt., 20 Jan 66;
TWX, DIMS 62, DOD Mgr to AAVS, 22 Jan 66.

(U) The DOD Manager went to the Director of Mission Operations for NASA for the answer. He pointed out that at present there was only one ALOTS-equipped aircraft. Additional aircraft would not be available for a year and a half. The DOD could not commit itself to a mandatory support requirement with only one aircraft -- especially since the aircraft would have to support both the Western and Eastern Test ranges. Coupled with the problem of aircraft maintenance, this could nullify high-altitude photo support. This had happened during GT-6. The DOD office therefore asked NASA to answer three major questions. First, was the high-altitude photography a mandatory or a desirable requirement. Second, was there any requirement for F-4C back-up photo support. Finally, if F-4C support was required, was NASA willing to fund the support.⁷³

(U) AFETR pointed out that although four ALOTS aircraft were scheduled, the one in the inventory would be at the contractor's plant during the first week in April and for two weeks per month between August and December. The test range asked that the F-4C capability be maintained through calendar year 1966.⁷⁴

(U) AFCS said it would provide the necessary support if NASA was willing to reimburse it and that it would have to know by 4 March if it were to support GEA-8, since the pods were scheduled for a training film production beginning 7 March. On 4 March, AAVS was advised that F-4C support would not be required on GEA-8 or any following launches.⁷⁵

73. Memo, DOD Mgr for Manned Space Flt to Director, Mission Operations, NASA, "Hi-Altitude Photographic Support for GEMINI Launches," 11 Feb 66.

74. TWX, ETORP-2 30058, ETR to AFSC and AAVS, 14 Feb 66.

75. TWX, SCBSST 15483, AFSC to AFETR, NRD, DOD Manager, 1 Mar 66; Mag, AVFDD 00429, AAVS to AFETR, NRD, and DOD Mgr, 2 Mar 66; TWX, ETORP-2 30092, AFETR to AAVS, 4 Mar 66.

Documentation

(U) AAVS continued its coverage of recovery activities on the Gemini program. The aerial photography from the C-54 had stopped following GT-2.⁷⁶

(U) Recovery activities coverage had been accomplished during all the Gemini missions. AAVS stationed photographers at opportune locations around the world. In addition, the service covered ARRS practice for recovery operations. On one such project the first tragedy connected with the Gemini program occurred. An HC-54 and an HC-97 flying out of Kindley AFB, Bermuda, on 29 June were practicing recovery operations. In addition to the regular crews, AAVS cameraman SSgt A. H. Rankin was aboard the HC-54 and cameraman ALC E. E. Chavers was flying in the HC-97. The two aircraft exploded in mid-air as the HC-54 collided with the HC-97.

(U) On the actual recovery operations, AAVS cameramen had their share of problems. On GT-2, they covered the Navy recovery from an ARRS aircraft. However, the courier aircraft which was to return the film from Trinidad never arrived. Consequently, the 35mm ECN and black and white film shot by AAVS personnel on 19 January did not return to Orlando until 20 and 21 January.⁷⁷

(U) For GT-3, AAVS put a three man crew, consisting of two cameramen, one shooting 35mm color and the other using B&W film, and one photographer, aboard each of the two prime aircraft in the primary recovery area. Coverage included departure of HC-54's on the mission, inflight sequences of the pararescuemen

76. TWX, DDMB 62693, DOD Mgr to AFCS,, 8 Mar 65.

77. Ltr, Capt J. Robert King, Asst. Ops. Officer, 1365th Photo Sq., to Doou. Div., DCS/Photo, AAVS, "Photo Mission Report on GT-2," 29 Jan 65.

suiting up and jumping, and activities about the capsule in the water. Aerial congestion in the splash-down area made it necessary for the HC-54 to stand-off; thus, the cameramen had to use long focal length lenses. This combined with the necessary hand-held mode of camera operation caused much of the film to be jumpy. And again courier service caused some worry. The courier was to return on a plane already full of equipment and people. He had to "bump" a passenger already on board.⁷⁸

(U) Prior to GT-3, AAVS had to undertake an extensive program to provide film clips covering support operations by the various USAF organizations participating in Project Gemini.⁷⁹

(U) On GT-4, support to Air Rescue included coverage of preparation activities of global contingency forces at respective locations. This included monitoring count-down, orbital surveillance and preparation for recovery of the capsule.

(U) An AAVS photographic crew deployed on 14 August 1965 for Kindley AFB, Bermuda, to document the 55th Air Rescue Squadron's participation on GT-5. This crew consisted of a project officer, four cameramen and two photographers.⁸⁰

(U) The 55th had already deployed two aircraft to Lima, Peru and two aircraft to Howard AFB, Canal Zone. On launch day, two HC-97's and one C-54 were airborne in the event of an emergency. During the eight-day flight, one HC-97 was on constant two-hour alert and one HC-97 was on 30-minute alert

78. Ltr, H.R. Albert, Asst. DCS/Photo, AAVS, to DOD Mgr for Manned Space Flt, "Report on DOD Support to Project Gemini," 30 Mar 65.

79. TWX, DMS-P 63064, DOD Mgr to USAF80, 26 May 65.

80. Memo for Record, 1st Lt. J. W. Peterson, Project Officer to 1365th Ops, "Project Report 65/540, ARS Supports Gemini-GT-5," 16 May 65.

during the hours that the capsule could be landed in the primary recovery zone. On recovery day, two HC-97's were airborne and were stationed at either end of the recovery zone in event of under or over shoot. The photo crew covered the assignment in 35mm EBN, 35mm B&W, still color, and still black and white.

(U) Photo coverage consisted of establishing shots of Kindley AFB, HC-97's take-offs, a briefing of all personnel by the assistant operations officer, an informal briefing of alert flight crews by the operations officer, suiting up of the pararescue men, inflight shots of the flight crews, and poor aeriels of the capsule during Navy recovery operations.

(U) On GT-7 and GT-6, AAVS again provided ARRS recovery operations documentation. Up to this point, recovery operations coverage had been duplicated by NASA photographers and, in some cases, by Navy photographers aboard the pickup ship.

(U) This was not the case on GT-8. As pointed out earlier, AAVS had camera crews located with ARRS aircraft crews at strategic locations around the world. Thus when GT-8 encountered problems and had to splash down in the Pacific, AAVS cameramen were aboard the ARRS recovery aircraft. AAVS personnel from Det 6 of the 1352nd Photo Group, flying with ARRS aircraft out of Naha AB, Okinawa, provided the only documentation of the initial location of the capsule and contact with the downed astronauts. The resulting footage was used world-wide for media release.

(U) Throughout the remainder of the program, AAVS documentation continued but on an ever-decreasing scale.

Personnel

(U) On GT-1, AAVS deployed 20 personnel in support of the project. This included the five-man flight crew and five-man photo crew of the C-54; one officer, six cameramen and two photographers from the 1365th Photo Sq to provide ARRS coverage in the primary recovery area.

(U) AAVS deployed 22 personnel in support of GT-2. This included the six-man flight crew and five-man photo crew of the C-54; one officer, six cameramen and three photographers from the 1365th Photo Sq to provide ARRS coverage in the primary recovery area. The 1352nd Photo Gp employed two photo specialists assigned to the pod program.

(U) On GT-3, AAVS deployed 26 personnel in support of the program. This included one officer, four cameramen and two photographers from the 1365th Photo Sq to provide ARRS coverage in the primary recovery area; and four personnel from Det 3, 1365th to Las Palmas, Canary Islands, Kano, Nigeria, Salisbury, Rhodesia, and the Mauritius Islands. The 1352nd Photo Gp employed 10 personnel. This included two cameramen at Hickam AFB, two at Nandi, Fiji Islands, two at Perth and two at Townsville, Australia, and two at Kwajalein. In addition, five civilians supported the pod program.

(U) AAVS deployed 34 personnel to support GT-4. This included one officer, four cameramen and two photographers from the 1365th Photo Sq to provide ARRS coverage in the primary recovery area; and one to cover ARRS operations at Lima, Peru, and five personnel from Det 3, 1365th to San Pablo, Kano, Nigeria, Wheelus AFB, Aden, and Las Palmas. The 1352nd Photo Gp employed 16 personnel. This included three cameramen at Hickam AFB, two at Pago Pago,

one to Perth and one to Townsville, Australia, two to Mahan AB and two at Hickam AFB. In addition, five personnel supported the pod program.

(U) On GT-7/6, AAVS deployed 26 personnel in support of the project. This included one officer, four cameramen and three photographers from the 1365th Photo Sq to provide ARRS coverage in the primary recovery area; and three personnel from Det 3, 1365th to Dakar, Agassara, and Kano. The 1352nd Photo Gp employed ten personnel. Deployment of cameramen was the same as on GT-5. Five personnel supported the pod program.

(U) AAVS deployed 19 personnel to support GTA-8. This included one officer, four cameramen and two photographers from the 1365th Photo Sq to provide ARRS coverage in the primary recovery area, and two men from Det 3, 1365th at Kano, Nigeria, and in Aden. The 1352nd Photo Gp employed 10 personnel at the same locations as for GT-5 and GT-7/6.

(U) On GTA-9, AAVS deployed 18 personnel in support of the project. All locations and distribution were the same as for GTA-8, except Det 3, 1365th sent no one to Aden.

(U) On GTA-10, AAVS deployed 16 personnel in support of the project. This included one officer and four airmen from the 1365th Photo Sq to provide ARRS coverage in the primary recovery area; and one man from Det 3, 1365th at Kano, Nigeria. The 1352nd Photo Gp again employed 10 personnel.

(U) AAVS deployed 17 personnel in support of the GTA-11 program. 1365th Photo Sq support to provide ARRS coverage in the primary recovery area was cancelled. One man went from Det 3, 1365th to Waco, Texas. The 1352nd Photo Gp employed 16 personnel with the Pacific rescue and recovery units.

(U) On GTA-12, AAVS deployed 17 personnel in support of the program. 1365th Photo Sq support to provide ARRS coverage in the primary recovery area was cancelled. One man was sent from Det 3, 1365th to Wheelus AFB, Libya. The 1352nd Photo Gp employed 16 personnel with the Pacific rescue and recovery units.

(U) On all the manned Gemini launches (GT-3 through GT-12) AAVS's 1360th USAF hospital provided one doctor and two medical technicians to support the NASA medical personnel at Cape Kennedy.

Highlights

(U)
~~(s)(c)~~ The 322nd Air Division supported the plan for possible forceful recovery in the European/MEAFSA area (OPLAN 116 referenced above). Before launches, CIRCUSAFE alerted forces and task units as to impending operations.⁸¹

(U)
~~(s)(c)~~ For GEMINI III, the 322nd Air Division sent an Airlift Control Force to Wiesbaden, briefed all TAC rotational C-130 personnel on the mission, and ordered ten C-130s to Wiesbaden. Thirty-three rotational aircraft, including C-130s and C-124s, were programmed for airlift of an airborne battalion, and 202 support personnel were involved. For GEMINI IV and subsequent launches, it was not believed necessary to position aircraft and personnel. The concept was to continue normal operations in the Central European area, with preparations made to divert aircraft and personnel if forceful recovery should become necessary.

(U) MATS/MAC was involved directly in only two recovery operations.⁸²

When the GEMINI III flight ended in the primary area, ARRS aircraft were

81. Hist, 322 Air Div, Jan-Jun 65, Secret Annex, pp. 5-8.

82. Msg, 21 AF to MAC, 25 Nov 66 (MAFOIR files); pp. 17, 22, this history.

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(U) On QTA-12, AAYB deployed 17 personnel in support of the program. 1365th Photo Sq support to provide ARRS coverage in the primary recovery area was cancelled. One man was sent from Det 3, 1365th to Wheelus AFB, Libya. The 1352nd Photo Gp employed 16 personnel with the Pacific rescue and recovery units.

(U) On all the manned Gemini launches (GT-3 through GT-12) AAYB's 1360th USAF hospital provided one doctor and two medical technicians to support the NASA medical personnel at Cape Kennedy.

the first on the scene, and ARRS personnel were attaching the flotation collar to the capsule when other aircraft arrived. When the GEMINI VIII flight was terminated early because of a malfunction, it splashed down in a secondary landing area 450 miles west of Okinawa. ARRS aircraft were on hand. Pararescuemen of Guam and Okinawa-based squadrons dropped from aircraft into the sea, where they attached a flotation collar to the capsule and assisted the astronauts. For the GEMINI VIII effort, the participating squadrons were presented the NASA "Group Achievement Award" and were congratulated by General John P. McConnell, Chief of Staff, Air Force; General Hunter Harris, Jr., Commander in Chief, PACAF; and Rear Admiral Henry S. Parsons, Commander, Hawaiian Sea Frontier and Commander, Task Force 130 (Gemini).⁸³

(U) A 21st Air Force C-135, carrying Astronauts Grissom and Young on a tour of Far East bases, was diverted from Hawaii to Okinawa to airlift the GEMINI VIII astronauts from Okinawa to Cape Kennedy. A Charleston-based C-130 was dispatched on one hour's notice to carry a special NASA team from Patrick AFB to Okinawa, and a Naval Air Transport Wing (Pacific) flew the capsule from Okinawa to Patrick AFB.

83. Msgs, CBAF, Unclass 76347, 17 Mar 66; CTF 130, 17 Mar 66; CINCPACAF 31379, 24 Mar 66 (NAFOIN files.)

GEMINI TIMETABLE*

<u>Mission</u>	<u>Crew</u>	<u>Date(s)</u>	<u>Duration (hrs:min:sec)</u>	<u>Revolutions</u>	<u>Objectives Accomplished</u>
Gemini I	Unmanned	8 Apr 1964	-	3	Demonstrate s/c structure GLV systems performance.
Gemini II	Unmanned	19 Jan 1965	18:16	suborbital	Demonstrate s/c performance.
Gemini III "Molly Brown"	Grissom-Young	23 Mar 1965	4:52:31	3	Manned qualification of Gemini s/c
Gemini IV	McDivitt-White	3-7 Jun 1965	97:56:12	62	Demonstrate s/c systems and crew capability for four days; demonstrate EVA (walk in space by White).
Gemini V	Cooper-Conrad	21-29 Aug 1965	190:55:14	120	Demonstrate long duration flight, rendezvous radar and rendezvous maneuvers.
Gemini VII	Borman-Lovell	4-18 Dec 1965	330:35:01	206	Two-week duration, shirt- sleeve environment, rendez- vous vehicle for Gemini VI, controlled reentry.
Gemini VI	Schirra-Stafford	15-16 Dec 1965	25:51:24	16	On-time launch procedures, closed loop rendezvous, stat keep with s/c VII. Originally scheduled for 25 Oct 1965 to rendezvous and dock with Agena but scrubbed when contact with Agena was lost shortly after launching.

s/c - spacecraft

EVA - Extra Vehicular Action (space walk)

GLV - Gemini Launch Vehicle

MMU - Self-contained Astronaut Maneuvering Unit

(cont'd)

<u>(cont'd)</u> <u>Mission</u>	<u>Crew</u>	<u>Date(s)</u>	<u>Duration</u> <u>(hrs:min:sec)</u>	<u>Revolutions</u>	<u>Objectives</u> <u>Accomplished</u>
Gemini VIII	Armstrong-Scott	16 Mar 1966	10:41:26	7	Demonstrated rendezvous and docking with Agena, multiple Agena re-start in orbit, controlled landing, emergency recovery (mission terminated early in Pacific because of control system electrical short).
Gemini IX	Stafford-Cernan	3-6 Jun 1966	72:20:50	45	First test in operational environment for AMU. Demonstrate three rendezvous techniques, EVA with detailed work tasks, precision landing (0.38 mm from planned landing point).
Gemini X	Young-Collins	18-21 Jul 1966	70:46:39	43	Dual rendezvous using Agena propulsion for docked maneuvers, retrieval of experiment package from Agena during EVA; demonstrated feasibility of using onboard navigation for rendezvous.
Gemini XI	Conrad-Gordon	12-15 Sep 1966	71:17:08	44	First-orbit rendezvous and docking with Agena, 741 mm apogee using Agena propulsion, 161 minutes total EVA, tether exercise, automatic reentry.
Gemini XII	Lovell-Aldrin	11-15 Nov 1966	94:34:31	59	Three EVAs, gravity-gradient tether exercise, rendezvous and docking with Agena, rendezvous with solar eclipse.

*NASA, Gemini Teamwork in Action, 23 Dec 66, (MAFUTH files).

GEMINI ASTRONAUTS

<u>Name</u>	<u>Mission</u>
Maj. Edwin E. Aldrin, Jr. (USAF)	Gemini 12
Neil A. Armstrong (Civilian)	Gemini 8
Lt. Col. Frank Borman (USAF)	Gemini 7
Lt. Comdr. Eugene A. Cernan (USN)	Gemini 9
Maj. Michael Collins (USAF)	Gemini 10
Lt. Comdr. Charles P. Conrad (USN)	Gemini 5, Gemini 11
Lt. Col. L. Gordon Cooper (USAF)	Gemini 5
Lt. Comdr. Richard P. Gordon (USN)	Gemini 11
Lt. Col. Virgil I. Grissom (USAF)	Gemini 3
Capt James A. Lovell, Jr. (USN)	Gemini 7, Gemini 12
Maj. James A. McDivitt (USAF)	Gemini 4
Capt. Walter M. Schirra, Jr. (USN)	Gemini 6
Maj. David R. Scott (USAF)	Gemini 8
Lt. Col. Thomas P. Stafford (USAF)	Gemini 6, Gemini 9
Maj. Edward H. White (USAF)	Gemini 4
Comdr. John W. Young (USN)	Gemini 3, Gemini 10